Assessing "Credible Fear": A Psychometric Examination of the Trauma Symptom Inventory-2 in the Context of Immigration Court Evaluations

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Sarah Anne Filone, M.A.

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Dedication

For my parents, who always told me to go for it; and for my sister, who showed me that I could.

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Abstract

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Sarah A. Filone

Recent immigration trends indicate that the United States is home to a remarkably diverse and rapidly growing population of displaced persons. Many of these individuals have survived exceptional trauma and are thus particularly vulnerable to trauma-related behavioral health disorders. Mental health professionals are commonly asked to assess immigrants within this population in the service of immigration court decision making. These assessments present a variety of challenges for clinicians, including the assessment and documentation of trauma-related symptoms across cultural bounds. The Trauma Symptom Inventory-2 (TSI-2) may be uniquely suited to the demands of immigration court assessments; however it has not been previously examined in a culturally diverse sample. The current study provided a psychometric examination of the TSI-2 within a sample of 97 immigrants with histories of trauma. De-identified TSI-2 data were drawn from several clinicians' existing immigration assessment files. Reliability, validity, and standardization sample comparison results indicated that the TSI-2 is appropriate for use within an immigrant population, and the currently available TSI-2 norms are likely acceptable.

Assessing "Credible Fear": A Psychometric Examination of the Trauma Symptom Inventory-2 in the Context of Immigration Court Evaluations

Each year, tens of thousands of immigrants enter the United States hoping to achieve permanent residence. Numbers of refugees and asylum seekers from Central America have increased steeply in recent years, with "credible fear" applications (i.e., applications based on fear of persecution in one's country of origin) at the southern United States border increasing sevenfold in recent years from fewer than 5,000 applications in 2008 to more than 36,000 applications in 2013 (Chang & Linthicum, 2013). In addition, the United Nations High Commission on Refugees reported that asylum applications in industrialized countries reached a 22-year high in 2013, in part because of wars in Syria and Iraq, as well as deteriorating conditions and human rights violations in several other countries around the world. The United States received the second highest number of applications for asylum or refugee status that year, with 84,400 applications in 2013 (United Nations High Commission on Refugees, 2015). Taken together, these statistics indicate that the United States is home to an exceptionally diverse and rapidly growing population of displaced persons.

Many of these individuals have survived severe trauma-related experiences such as imprisonment, torture, interpersonal violence, war, famine, female genital mutilation, and other human rights violations (Dana, 2007). Accordingly, displaced persons are particularly vulnerable to trauma-related symptomatology including posttraumatic stress disorder (PTSD), depression, and anxiety. De Jong et al.'s (2001) survey of survivors of violence from Algeria, Gaza, Ethiopia, and Cambodia reported PTSD rates of 37.4% among the study populations. A 2004 study examining trauma-related symptoms in

Rwanda found that 24.8% of study participants met criteria for PTSD (Pham, Weinstein, & Longman, 2004). These rates are substantially elevated compared with the American lifetime prevalence rate of approximately 6.8% and past-year prevalence rate estimated to be around 3.5% (Kessler et al., 2005). Thus, immigrants with histories of trauma present a unique set of challenges for mental health professionals endeavoring to provide treatment and assessment services to this growing population. Individuals facing resettlement in the United States may require psychological assessment for a variety of purposes including social service provision and mental health treatment; however, psychological assessments related to immigration court proceedings are particularly challenging as evaluators are commonly asked to assess and diagnose individuals from disparate cultures within the context of highly consequential court hearings (Dana, 2007).

Immigration Court Evaluations

Mental health professionals may become involved in several types of psychological assessments in the service of immigration court decision making. For example, an individual seeking immigration protection based on an asylum claim, the Convention against Torture (CAT), a U-Visa or T-Visa, or the Violence Against Women Act (VAWA) may require psychological assessment to assist with documentation of psychological constructs (often trauma) that are relevant to the individual's immigration case. A thorough review of immigration evaluation procedures is beyond the scope of this study, but brief summaries of several relevant types of assessment are provided below for reference.

Asylum Evaluations

Political asylum is a judicial process by which an individual facing persecution in his or her home country may be granted residence and protection within the United States. Individuals seeking asylum must do so "affirmatively" via a formal application process within 1 year of entering the United States. If the case is not immediately decided by an asylum officer, or an asylum claim is filed "defensively" pursuant to the initiation of removal ("deportation") proceedings, the asylum claim will be determined in immigration court (United States Citizenship and Immigration Services: Refugee, Asylum, and International Operations Directorate Asylum Division, 2010). In 2013, 25,199 individuals were granted asylum, including 15,266 individuals who were granted asylum affirmatively by the Department of Homeland Security (DHS) and another 9,933 individuals who were granted asylum defensively in an immigration court by the Department of Justice (Office of Immigration Statistics, 2014). In both affirmative and defensive cases, a psychological evaluation may be requested by the legal representation of the asylum applicant. United States' asylum law allows status to be granted based on either past persecution or a well-founded fear of future persecution, so long as the persecution occurs on account of religion, race, nationality, membership in a particular social group, or political opinion.

As in criminal and civil legal contexts, the role of the forensic evaluator is not to make a determination regarding the ultimate issue (i.e., whether the applicant qualifies for asylum), but rather to assess and document psychological constructs relevant to this decision. For example, asylum evaluations often serve to document the psychological impact of persecution and to comment on whether the psychological presentation of the

applicant is consistent with experiences of trauma. In addition, psychologists conducting asylum evaluations typically assess the individual for other types of symptomology and provide a description of the individual's current functioning. Asylum assessments also commonly include commentary on the likely impact of removal to the country of origin. Lastly, when asylum applicants fail to apply within the 1-year deadline, a forensic evaluator assesses what, if any, psychological symptoms may have impacted his/her ability to file an asylum claim within 1 year of entry. Two other forms of immigration relief – withholding of removal and protection under the Convention against Torture (CAT) – also require applicants to demonstrate past experiences of torture or fear of future persecution. Despite some differences in eligibility requirements and associated benefits, psychological evaluations for these types of relief are similar to those conducted for asylum cases. In fiscal year 2013, 26,317 CAT cases were adjudicated in the United States (Executive Office for Immigration Review, 2014)

U Visa/ T Visa Evaluations

The Trafficking Victims Protection Act of 2000 afforded immigration protection to individuals who have been victims of crime while within the United States (U Visa eligible) or who have been victims of human trafficking either to or within the United States (T Visa eligible). A U Visa applicant must demonstrate that he or she has suffered substantial physical or mental abuse as the result of being a crime victim and has cooperated with law enforcement. Thus, individuals who cannot provide documentation of physical harm sustained during the course of the crime may require an evaluation of the psychological harm incurred (Victims of Trafficking and Violence Prevention Act (VTVPA), 2000). The role of a psychologist in these cases is to document the presence

(or absence) of such harm, which is comparable to forensic assessments of civil litigants. Ten thousand U-Visas have been issued each year since U.S. Citizenship and Immigration Services (USCIS) began issuing the visas in 2008 (USCIS, 2014).

A T Visa applicant must demonstrate that he/she: (1) has been a victim of human trafficking either to or within the United States, (2) has cooperated with authorities, and (3) would suffer "extreme hardship involving unusual and severe harm" if removed from the United States (VTVPA, 2000, p. 16). In these cases, psychological evaluations attempt to address the question of extreme hardship (e.g., serious psychological harm/symptoms) that may be present if the individual is removed. T-Visas are often considered to be underutilized (in part because trafficking victims are sometimes difficult to identify and trafficking crimes are difficult to prove), with 1,869 filed and 1,401 approved applications in 2014 (USCIS, 2014).

VAWA Evaluations

The Violence Against Women Act (VAWA, 1994) allows spouses and children of abusive United States' citizens or legal permanent residents (LPR) to apply for immigration status independent of the abuser. VAWA applicants must demonstrate that they suffered "extreme cruelty" (i.e., severe physical, emotional, or sexual abuse) because of their spouse or parent, so psychological evaluations typically involve assessment and documentation of psychological indicia of spousal (or child) abuse.

Trauma Assessment in the Context of Immigration Evaluations

In each of the evaluation contexts described above, mental health professionals are faced with the difficult task of assessing various sequelae of trauma across cultural bounds within a uniquely diverse population. Evaluators may also be asked to comment

on the likelihood that an individual is exaggerating or malingering his/her mental health symptoms, particularly in cases where the individual's credibility (i.e., trustworthiness) is at issue. Many immigration-related psychological evaluations are conducted on a *pro bono* or low-fee basis, thus mental health professionals must carefully select assessment tools and procedures that will allow for thorough yet efficient evaluation of the individual and relevant issues.

Mental health professionals have many trauma-related assessment tools to select from when conducting immigration court assessments. A few, like the Hopkins Symptom Checklist-25 (HSCL-25; Parloff, Kelman, & Frank, 1954) and the Harvard Trauma Questionnaire (HTQ; Mollica et al., 1992), have been translated and validated for use with immigrant and refugee populations. Although both of these measures have significant strengths for use with immigrants with trauma histories (including efforts to incorporate items with cultural significance and versions available in several languages), they may not be ideal in the context of forensic psychological evaluations for immigration court purposes. For instance, the HSCL-25 is intended to be used as a screening tool and provides scores for depression and anxiety symptomatology only.

The HTQ is also a screening instrument designed to assess for traumatic experiences as well as symptoms associated with trauma. There are currently six versions of the HTQ including: Vietnamese, Cambodian, and Laotian versions (designed and written for use with Southeast Asian refugees); a Japanese version (designed and written for survivors of the 1995 Kobe earthquake); a Croatian Veterans' Version (designed and written for soldiers who survived the wars in the Balkans); and a Bosnian version (designed for use with civilian survivors of the Bosnian conflict) (Harvard Program in

Refugee Trauma, 2015). The measure is helpful for use with these specific populations; however, the specificity of the assessment versions excludes large ethnic and cultural groups that are often assessed during the course of immigration proceedings (e.g., individuals from South American, Central American, and African countries). In addition, the HTQ does not contain validity scales to assess for the possibility of symptom over-reporting or exaggeration.

When compared with these and several other trauma symptom assessment tools, one measure appears to have several advantages in the context of immigration court evaluations – the Trauma Symptom Inventory-2 (TSI-2). The TSI-2 has several uniquely beneficial characteristics in this context, including the assessment of a broad variety of symptoms that may be associated with trauma (in addition to traditional posttraumatic stress disorder presentation), efficient administration (approximately 20 minutes), the inclusion of validity scales to assist with malingering assessment, and availability in both Spanish and English language forms.

Trauma Symptom Inventory-2: An Overview

The Trauma Symptom Inventory-2 (TSI-2) is a revised version of the original Trauma Symptom Inventory (TSI; Briere, 1995). The second edition was published in 2011 and includes 136 self-report items that are designed to assess a variety of trauma and stress related symptomatology including post-traumatic stress, depression, dissociation, somatization, insecure attachment styles, and maladaptive coping behaviors (Briere, 2011). Respondents are asked to rate how often they experience each symptom (e.g., “nervousness”) on a scale of zero (“never”) to three (“all the time”). The measure yields scores for 12 clinical scales, 12 subscales, and 2 validity scales. The 12 clinical

scales include domains such as intrusive experiences (e.g., disturbing memories, flashbacks), anger, suicidality, sexual disturbance (e.g., discomfort with sexual experiences, risky sexual behaviors), defensive avoidance (effortful avoidance of stimuli associated with trauma), and impaired self-reference (e.g., difficulty with identity, boundaries).

In addition to the clinical scales, the TSI-2 contains four factor scores that are derived from combinations of clinical scale scores. For example, the posttraumatic stress factor is derived from the intrusive experiences, defensive avoidance, anxious arousal, and dissociation raw scores. The TSI-2 also includes two validity scales, which are embedded as measures of response style and are designed to determine whether a person is likely to deny or underreport symptoms (response level or RL scale), or to overreport symptoms related to trauma (the atypical response or ATR scale). Refer to Table 1 (p. 11) for the complete list of scales, subscales, and factors.

Table 1

TSI-2 Scales, Subscales and Factors

Scale/Subscale/Factor	Domain Evaluated
Validity Scale	
Response Level (RL)	Bias toward underreporting or denying symptomatology
Atypical Response (ATR)	Bias toward ovverreporting trauma-related symptoms
Factor	
Self-Disturbance (SELF)	Difficulties associated with inadequate self-awareness and negative models of self and others
Posttraumatic Stress (TRAUMA)	Posttraumatic stress and related anxiety and dissociation
Externalization (EXT)	Tendency to engage in dysfunctional or self-destructive behaviors when distressed
Somatization (SOMA)	See SOM scale
Clinical scale/subscale	
Anxious Arousal (AA)	Anxiety and hyperarousal symptoms
Anxiety (AA-A)	Symptoms of anxiety
Hyperarousal (AA-H)	Symptoms associated with posttraumatic hyperarousal
Depression (D)	Cognitive, affective, or somatic symptoms of depression
Anger (ANG)	Angry thoughts feelings, and behaviors
Intrusive Experiences (IE)	Reliving/intrusion symptoms of posttraumatic stress
Defensive Avoidance (DA)	Avoidance of upsetting thoughts, feelings, or memories
Dissociation (DIS)	Depersonalization, derealization, detachment, amnesia, identity splits
Somatic Preoccupation (SOM)	Somatic preoccupations and distress
Pain (SOM-P)	Aches and pains
General (SOM-G)	Generalized somatic complaints
Sexual Disturbance (SXD)	Sexual problems and behaviors
Sexual Concerns (SXD-SC)	Negative thoughts and feelings associated with sexuality
Dysfunctional Sexual Behavior (SXD-DSB)	Problematic sexual behaviors
Suicidality (SUI)	Suicidal thoughts and behaviors
Ideation (SUI-I)	Suicidal ideation
Behavior (SUI-I)	Suicidal behavior
Insecure Attachment (IA)	Difficulties or insecurities regarding close relationships with others
Relational Avoidance (IA-RA)	Discomfort or avoidance regarding close relationships
Rejection Sensitivity (IA-RS)	Preoccupation with abandonment or rejection in relationships
Impaired Self reference (ISR)	Difficulties in accessing identity, self, or self determination
Reduced Self Awareness (ISR-RSA)	Lack of awareness of internal mental processes associated with a personal sense of self
Other-Directedness (ISR-OD)	Overvaluing others' views and demands in the absence of sufficient self-reference
Tension Reduction Behavior (TRB)	Use of external activities (e.g. self-injury, binging) as ways to avoid or distract from upsetting internal states

*Adapted from Briere, J. (2011). *Trauma Symptom Inventory-2 professional manual*. Psychological Assessment Resources.

The TSI-2 constitutes a substantial revision from its previous version, and it contains three new scales (insecure attachment, suicidality, and somatic preoccupation) and four new or considerably revised factors. The atypical response (ATR) scale was also significantly modified from the original TSI's scale in an effort to better assess for intentional exaggeration (i.e., malingering) of posttraumatic stress symptomatology in addition to overreporting of generalized distress across domains. Overall, approximately 64% of the TSI-2's content is new or modified when compared with its predecessor.

TSI-2 Utility with Immigrant Populations

As previously noted, the TSI-2 has several features that may make the measure uniquely suited for psychological assessment related to immigration court proceedings. First, it assesses for a range of symptomatology that may be associated with trauma but is outside the scope of the traditional western conceptualization of posttraumatic stress disorder. In this way, the TSI-2 may allow for more thorough assessment and ameliorate some of the concerns related to multicultural assessment. Second, the TSI-2 contains embedded validity scales to aid in the assessment of response style, which is often relevant in the immigration court context. Additional advantages include efficient administration (roughly 20-30 minutes) and availability in both Spanish and English language forms.

Breadth of Symptomatology Assessed

The range of symptomatology assessed by the TSI-2 is important because research has demonstrated that individuals with trauma histories, particularly those with repeated and interpersonal traumatic experiences, may present with a variety of symptoms including anxiety; depression (Heim &Nemeroff, 2001); emotion

dysregulation (Briere & Rickards, 2007); difficulty with identity (Briere & Rickards, 2007); somatic complaints (Gupta, 2013); suicidality (Afzali, Birmes, & Vautier, 2015; LeBouthillier, McMillan, Thibodeau, & Asmundson, 2015); and maladaptive coping strategies such as self-harm, substance use, aggression, and impulsive sexual behaviors (Briere & Gill, 1998; Wright, Foran, Wood, Eckford, & McGurk, 2012).

These symptom domains are particularly relevant to immigrants with trauma history as many individuals within this population have experienced chronic trauma (e.g., experiences associated with war, torture, and repeated interpersonal violence). The somatization scale may be of particular use with this population, as several studies have demonstrated the tendency refugee populations to present with somatic symptoms of distress.

Somatization in immigrant populations. Several authors have criticized the imposition of the western conceptualization of PTSD on non-western cultures (see, e.g., Frey, 2001; Marsella, Friedman, & Spain, 1996; Summerfield, 2002). However, much of the criticism within the literature stems from findings that refugees and immigrants from non-western cultures tend to present with somatic symptoms rather than other, more western symptoms of PTSD (Renner, Salem, & Ottomeyer, 2007). In fact, it has been argued that intrusion and hyperarousal symptoms appear to manifest comparably across cultures, but that somatization symptoms are likely to be more prominent than avoidance or dissociation symptoms in some non-western cultural groups (Stamm & Friedman, 2000). For example, Peltzer (1998) found that torture survivors from Sudan and Malawi exhibited somatic numbing rather than emotional numbing in response to severe trauma. Somatic “replacements” for traditional symptoms were similarly reported in individuals

from Viet Nam (Matkin, Nickles, Demos, & Demos, 1996); India, China, and Africa (Mumford et al., 1991); Cambodia and Laos (Hinton, Hinton, Eng, & Choung, 2012; Mattson, 1993); Northern Africa (Vontress & Epp, 2000); and the Philipines and Mien (Lin, Carter, & Kleinman, 1985).

There are several possible explanations for this phenomenon. Some authors argue that because non-western cultures tend to be more collectivistic, they value interpersonal balance very highly (Renner et al., 2007). Thus, individuals from these cultures may be more comfortable describing physical symptoms than psychological concerns (which could be perceived as accusatory toward those involved in the traumatic experience) (Renner et al., 2007). Other possible explanations involve culturally-specific belief systems related to illness, higher prevalence of alexithymia (difficulty expressing emotions) in non-western cultures, stigma related to behavioral health symptoms, and somatic sensitization following experiences of torture (Rohlof, Knipscheer, & Kleber, 2014). Regardless of the etiology, it has been well documented that refugees "form a particular population in which somatization is prominent" (Rohlof et al., p. 1).

Thus, the TSI-2's inclusion of a somatization scale (which functions as both a clinical scale and factor) may represent a unique opportunity to assess for symptoms associated with the western conceptualization of PTSD in conjunction with the somatization symptoms commonly associated with trauma survivors from non-western cultures. In this way, the TSI-2 may allow forensic mental health professionals to present data consistent with the western conceptualization of trauma (typically expected during court proceedings) while commenting on culturally specific sequela of trauma, such as somatization.

Validity Scales

The TSI-2 is a unique trauma symptomatology measure in that it includes scales related to response style. The Response Level (RL) scale assesses for the tendency to underreport symptomatology or to deny commonly experienced phenomena. This is a helpful scale in the context of immigration assessment because it provides information related to an individual's perception of his/her symptoms and his/her willingness to endorse or discuss symptomatology. The Atypical Responding (ATR) scale, however, is of particular use for immigration court assessments.

Atypical responding scale. The ATR scale is highly relevant in the context of immigration court assessments because mental health professionals are often asked to evaluate whether an individual is likely exaggerating or overreporting his/her symptoms. Of course, an elevated ATR scale does not provide evidence that an individual is relaying erroneous or exaggerated factual data as part of his/her case, but it may help to identify a pattern of exaggerated responding or endorsement of unlikely symptoms during the assessment, which can be important information in the context of highly consequential immigration hearings.

In the TSI-2 normative sample, an elevated ATR scale is typically considered to indicate that an individual is (1) overendorsing many items on the test (e.g., endorsing 3s for many items); (2) overrendorsing items specific to posttraumatic stress; (3) expressing extreme levels of genuine distress; or (4) randomly responding with unintentional endorsement of rare symptoms. The original TSI ATR scale demonstrated racial differences, necessitating a higher validity cut-off for African American respondents (Briere, 1995). However, the TSI-2's revised ATR scale did not exhibit racial differences

in the standardization sample, thus the validity cut-off is constant across races and ethnicities (Briere, 2011).

To date, the TSI-2's ATR scale has not been extensively studied within the population of immigrants with trauma history. Weiss (2013) conducted the only published study that has attempted to study the utility of the ATR scale within a comparable population of African torture survivors. The study aimed to examine the ability of the ATR scale of the TSI-2 and several other measures of malingering (e.g., the Miller Forensic Assessment of Symptoms Test [M-FAST]) to differentiate between genuine and feigned posttraumatic stress symptomatology among a sample of 68 West and Central African survivors of torture. Results indicated that none of the included measures demonstrated high rates of both sensitivity and specificity, suggesting that more research is necessary to determine how the ATR scale functions within culturally diverse populations.

Although there has been little published work involving the TSI-2 ATR scale, prior research with similar "fake bad" scales has indicated that individuals with extreme and chronic trauma histories sometimes exhibit genuine elevations on measures of rare symptomatology, likely due to the excessive nature of their trauma-related symptoms (Klotz Flitter, Elhai, & Gold, 2003). In addition, individuals in the TSI-2's clinical standardization sample (those with trauma such as sexual abuse or combat experience) had significantly higher scores on the ATR scale than matched controls from the normative sample (Briere, 2011). Coupled with concerns about possible cultural or racial differences, this may suggest that immigrants with trauma histories (many of whom are

seeking immigration relief such as political asylum pursuant to severe trauma) should not be compared to the general TSI-2 normative sample's ATR score.

TSI-2 Norms and Standardization Data

The TSI-2 was standardized and validated on adults in the general United States population, and score conversion tables are stratified by several permutations of age and sex (e.g., males ages 55-90) (Briere, 2011). The standardization sample consisted of 678 adults (54% female) between the ages of 18 and 90 (M = 53.4, SD = 18.3). Participants were selected specifically to represent the United States census for sex, race/ethnicity, age, education level, and geographic region. Accordingly, a large majority of the normative sample (73%) was Caucasian, with relatively small proportions of African American (11%), Hispanic (9%), and "other" (7%) racial/ethnic groups (Briere, 2011).

During development, the TSI-2 was examined for reliability and validity in several populations including university students (N = 1,528), incarcerated women (N = 125), and a "combined clinical validity sample" (CCV; N = 125). The clinical sample was comprised of four distinct groups: individuals with a diagnosis of borderline personality disorder (n = 30), combat veterans (n = 32), survivors of domestic violence (n = 31), and survivors of sexual abuse (n = 32) (Briere, 2011). Of the populations studied during the development of the TSI-2, the CCV sample probably best approximates the experiences of immigrants with trauma histories (e.g., domestic violence, sexual assault, war trauma); however, the CCV sample was 84% Caucasian and relatively highly educated (88% completed high school and 42% completing at least some college). Therefore, the clinical TSI-2 sample differed in several important ways from what would be expected in a

population of immigrants with histories of trauma, and further examination is indicated to determine whether the TSI-2 is appropriate for use with this population.

The Present Study

The TSI-2 manual states that the measure can be utilized to assess trauma related to "sexual and physical assault, intimate partner violence, combat, torture, motor vehicle accidents, mass casualty events, medical trauma, witnessing violence or other trauma, traumatic losses, and early experiences of child abuse or neglect" (Briere, 2011, p. 1); however, to date there have been no published studies examining the psychometric properties of the TSI-2 for use with several important populations, including torture survivors and culturally diverse samples. This represents a gap in the literature, as the TSI-2 has several strengths for use in the context of immigration assessment and the American Psychological Association (APA) ethics code advises psychologists to "use assessment instruments whose validity and reliability have been established for use with members of the population tested" (APA, 2010, 9.01).

The goal of the present study was to assess the TSI-2's utility within a sample of immigrants with traumatic histories. Statistical analyses were intended to help determine whether the levels and types of symptomatology assessed by the TSI-2 are similar in both the standardization sample and in a sample of immigrants with trauma history, whether the TSI-2 is appropriate for use with this population, whether there are any notable differences (as compared with the standardization sample) in clinical or validity scales, and whether separate norms are needed for cross-cultural utilization of the TSI-2.

It should be noted that the umbrella of "immigrants with trauma histories" encompasses an extremely heterogeneous group of rich and unique cultural systems.

Ideally, forensic evaluators would have access to measures and norms specific to each cultural group; however, such measures and data are not currently accessible for most commonly used standardized tests. Thus, it is argued that examining the utility of a widely used standardized measure within a culturally diverse population of immigrants with traumatic histories represents a considerable improvement over the currently available standardization data for this and other assessment measures, many of which are standardized on predominantly white populations from exclusively western cultures. In addition, although the rationale for the present study has focused primarily on the TSI-2's applicability to immigration court forensic assessments, standardization of the TSI-2 for use with diverse cultural groups has clear implications for other types of assessment, mental health treatment, and research with immigrant and non-western populations.

Method

Participants

Study data were collected from six mental health professionals (5 psychologists and 1 psychiatrist) who currently conduct immigration evaluations in the Northeastern region of the United States. Appropriate mental health professionals (i.e., those who have conducted immigration evaluations using the TSI-2) were identified through an existing immigration evaluation consultation group in the Philadelphia area. Interested mental health professionals were asked to submit de-identified TSI-2 profile (response) sheets to the lead researcher for study inclusion. Ninety-seven de-identified TSI-2 response sheets meeting study inclusion criteria were submitted for the study. To meet study eligibility requirements, the TSI-2 respondents were required to have completed the TSI-2 during the course of an immigration assessment and to have a trauma history of some kind.

Requested data included information regarding age, country of origin, type of evaluation (e.g., asylum), language of administration (i.e., Spanish or English), and sex of TSI-2 respondents. Clinicians submitting data to the study were also asked to submit scores on the Clinician Administered PTSD Scale (CAPS) for any individual for which the CAPS was administered. The CAPS is a structured interview that is often considered to be the "gold standard" of PTSD assessment, and it allowed for examination of convergent and criterion validity in a subset of the study sample (n=14) (Blake et al., 1995; International Society for Traumatic Stress Studies, 2015).

The TSI-2 respondent sample included 97 immigrants with histories of trauma (39 males; 58 females) who underwent psychological assessment in relation to a variety of immigration relief proceedings including: asylum (33%), extreme hardship waiver (30.9 %), Violence Against Women Act (VAWA; 12.4%), U-Visa (11.3%), and T-Visa (1%). Data regarding type of immigration relief were unavailable for 11 cases (11%). Participant ages ranged from 18 to 66 (M = 35.8; SD = 9.9).

The study sample was culturally diverse, with 46 unique countries of origin represented including: Afghanistan, Albania, Bangladesh, Belarus, Belize, Brazil, Bulgaria, Burma, Cambodia, Colombia, Cuba, Ecuador, Egypt, El Salvador, Ethiopia, Gambia, Ghana, Greece, Guatemala , Haiti, Honduras, Hungary, Indonesia, India, Iran, Iraq, Jamaica, Kazakhstan, Kenya, Korea, Kosovo, Liberia, Mali, Mexico, Morocco, Pakistan, Russia, Saudi Arabia, Sierra Léon, Somalia, Trinidad and Tobago, Uganda, Ukraine, Uzbekistan, Vietnam, and Zambia. To assess for differences in TSI-2 scores due to cultural factors, TSI-2 respondents were grouped into five regional categories based generally on the United Nations regional groups that were defined as (1) Latin America

and Caribbean (34.0% of the sample), (2) Africa (19.6%), (3) South and East Asia (17.5%), (4) Middle East (7.2%), and (5) Eastern Europe (14.4%). Country of origin information was not provided for seven TSI-2 respondents (7.2%). The majority of the TSI-2 profiles was completed using the English version of the TSI-2 (80.4%), with the remaining 19.6% of the profiles (n = 19) completed using the Spanish version of the TSI-2. Information regarding the type of trauma experienced was available for 45.4% of the sample (n = 44), and included traumatic experiences such as domestic violence, child abuse, war trauma, torture, sexual violence, female genital mutilation (FGM), and assault.

Sample Size

To determine an appropriate sample size for a psychometric study of the TSI-2 within an immigrant population, the literature related to one of the only trauma measures specifically designed for refugee/immigrant populations – the Harvard Trauma Questionnaire (HTQ) – was examined. The initial development of three Indochinese versions of the HTQ utilized a total sample of 91 participants split among the three versions (Vietnamese, Cambodian, and Laotian) (Mollica et al., 1992). Based on these data, and prior research that has identified difficulties with recruitment and access to immigrant (particularly refugee and asylee) populations, the target sample size was set at approximately 100 profiles, and 97 was considered acceptable.

A sample size of 97 was judged to be an appropriate sample size for the majority of planned analyses; however, guidelines for confirmatory factor analysis and norm creation are variable. For example, recommended sample size for confirmatory factor analysis is typically related to either a set minimum N *or* to a determination of subjects to variable (STV) ratio. Minimum sample size guidelines range from 100 (Gorsuch, 1983;

Kline, 1979) to 500 or more (Comrey & Lee, 1992). Guidelines predicated on STV ratios are similarly varied, ranging from a recommended ratio of 2:1 (Kline, 1979) to 20:1 (Hair, Anderson, Tatham, & Black, 1995). In accordance with the methods presented in the TSI-2 manual, variables for the present study were defined as TSI-2 clinical scales and subscales, yielding a total of 18 variables. Thus, a sample of 100 will provide a 5.55:1 STV ratio, which has been identified as an acceptable STV ratio (Bryant & Yarnold, 1995; Everitt, 1975; Gorsuch, 1983). In addition, several authors have argued that "rule of thumb" sample sizes are of little use in practical research because many factors contribute to the overall utility of factor analysis. Preacher and MacCallum's (2002) article concluded: "As long as communalities are high, the number of expected factors is relatively small, and model error is low (a condition which often goes hand-in-hand with high communalities), researchers and reviewers should not be overly concerned about small sample sizes" (p. 160). Thus, the sample size of 97 was judged to be acceptable for factor analyses.

Measures

Measures included completed TSI-2 profiles for all study participants (N = 97), as well as completed Clinician Administered PTSD Scale (CAPS) for a subset of the sample (n = 14).

Hypotheses

The present study represented the first attempt to examine the utility of the TSI-2 within a population of culturally diverse immigrants with histories of trauma, thus analyses were largely exploratory. However, based on the literature outlined above, several outcomes were expected.

Factor structure. Confirmatory factor analysis was employed to determine whether the four-factor structure identified within the American standardization sample applies to a sample of culturally diverse immigrants with histories of trauma. Given the literature related to somatization in this population, it was hypothesized that the four-factor solution would not be an acceptable fit for this population, such that the somatization factor of the TSI-2 would be subsumed under the posttraumatic stress factor, resulting in a three-factor solution for the measure.

Study sample vs. TSI-2 standardization sample. It was hypothesized that the culturally diverse immigrant sample would score significantly higher on the ATR validity scale than the general standardization sample of the TSI-2. This hypothesis was based on previous research demonstrating that individuals in trauma-specific clinical groups (e.g., combat veterans, domestic violence survivors) tend to have higher ATR scores (Briere, 2011). In light of the body of research related to trauma-related somatic symptoms in refugees and non-western populations, it was also hypothesized that the study sample would exhibit significantly higher somatization subscale, scale, and factor scores compared with the TSI-2 standardization sample. The study sample was also expected to exhibit significantly higher scores on many of the remaining clinical scales and subscales, as this pattern of results was found in previous studies of individuals with trauma history (Briere, 2011).

Study sample vs. TSI-2 CCV sample. Analyses comparing the study sample to three groups within the TSI-2 combined clinical validity sample (e.g., combat veterans, domestic abuse survivors, and sexual abuse survivors) were largely exploratory and aimed at determining whether culturally diverse immigrants exhibit significant

differences on scale, subscale, or factor scores when compared with scores of western samples with histories of trauma. The CCV sub-sample of individuals with a diagnosis of borderline personality disorder was excluded from these analyses, as the goal was to contrast trauma survivors from different cultural groups and individuals in the borderline personality group did not necessarily have histories of trauma. The one exception to the exploratory nature of these comparisons related to the somatization subscales, clinical scale, and factor scores. In accordance with research in the area of somatization in refugee and non-western populations, it was hypothesized that the study sample would exhibit significantly higher scores on scales related to somatization as compared with the TSI-2 CCV sample.

Results

Reliability

Reliability of the TSI-2 within the study sample was examined for both internal consistency and average item-total correlation. The internal consistency coefficient (Cronbach's alpha coefficient; α) gauges the extent to which items on an assessment tool reflect measurements of a cohesive underlying construct (Cronbach, 1951). Cronbach's alpha was used to calculate internal consistency of each clinical scale and subscale. The mean inter-item correlations (sometimes helpful for scales consisting of 10 or fewer items) and the average item-total correlations were also calculated. Average item-total correlations are another measure of internal consistency and are calculated by taking the mean of the item-total correlation for each item in a specific scale or subscale.

Overall, the TSI-2 scales and subscales demonstrated excellent internal consistency within the study sample (see Table 2 for specific values). In general,

Cronbach's alpha values of .70 or above are considered adequate and values above .80 are considered ideal. Only one of the TSI-2 subscales (dysfunctional sexual behavior) fell below the acceptable .70 level, and the majority (18/23) of the scales and subscales exhibited Cronbach's alpha values that exceeded .80. For each scale and subscale, item-total correlations were examined to determine the extent to which specific items on the scale were correlated with the overall scale. In general, correlations of .30 and above are considered adequate. If a specific item's item-total correlation falls below .30, it may be an indication that the item is measuring something different than the scale as a whole. Low item-total correlations were relatively rare in this sample, and are discussed in detail below.

Item-total correlations. On the dissociation (DIS) scale, one item ("having trouble remembering details of something bad that happened to you") fell below the acceptable item-total correlation with an item-total correlation of .24 (.30 is considered acceptable). This suggests that the item may be measuring something different from the construct measured by the scale as a whole, however the overall internal consistency of the dissociation scale remained excellent ($\alpha = .86$).

On the sexual disturbance (SXD) scale, two items fell below the acceptable item-total correlation. One item, "having sex with someone you hardly knew," had an item-total correlation of .20; and another item, "wanting to have sex with someone who you knew was bad for you," had an item-total correlation of .23. These correlations are considered low and suggest that the two items may be measuring something different from the scale as a whole. The overall internal consistency of the scale remained acceptable ($\alpha = .79$). The sexual concerns subscale (SXD-SC) of the sexual disturbance

clinical scale demonstrated adequate internal consistency (α = .81); however the dysfunctional sexual behavior (SXD-DSB) subscale demonstrated low internal consistency (α = .56), and contained an item that did not appear to measure the same construct as the rest of the subscale ("not protecting yourself during sex when you probably should have"; inter-item correlation = .28).

The tension reducing behavior (TRB) scale contained one item ("calming yourself down by eating more than you should") that fell below the acceptable item-total correlation with an item-total correlation of .20, suggesting that the item may be measuring something different from the construct measured by the scale as a whole. This makes logical sense, as many of the scale items gauge the presence of more serious maladaptive behaviors (e.g., self-injury); however the overall internal consistency of the dissociation scale remained strong (α = .82).

The atypical responding (ATR) scale contained one item ("feeling so irritable after a trauma that you got into fights with strangers") that fell below the .30 item-total correlation mark with an item-total correlation of .26. The overall internal consistency of the ATR scale remained excellent (α = .80).

Table 2

Internal Consistency of TSI-2 Scales

	# Valid Cases	Item *N*	α	Inter-item correlation mean	Average item-total correlation
Anxious Arousal (AA)	93	10	.89	.46	.64
Anxiety (AA-A)	95	5	.82	.48	.62
Hyperarousal (AA-H)	94	5	.80	.44	.58

Depression (D)	93	10	.92	.54	.70
Anger (ANG)	93	10	.89	.43	.62
Intrusive Experiences (IE)	91	10	.90	.48	.65
Defensive Avoidance (DA)	95	10	.88	.43	.61
Dissociation (DIS)	89	10	.86	.40	.58
Somatic Preoccupations (SOM)	93	10	.97	.41	.59
Pain (SOM-P)	95	4	.78	.47	.58
General (SOM-G)	94	6	.76	.35	.51
Sexual Disturbance (SXD)	90	10	.79	.26	.46
Sexual Concerns (SXD- SC)	91	5	.81	.47	.61
Dysfunctional Sexual Behavior (SXD-DSB)	95	5	.56	.22	.34
Suicidality (SUI)	94	10	.90	.49	.67
Ideation (SUI-I)	95	5	.92	.72	.81
Behavior (SUI-B)	95	5	.78	.42	.56
Insecure Attachment (IA)	94	10	.88	.43	.61
Relational Avoidance (IA-RA)	95	5	.82	.47	.61
Rejection Sensitivity (IA-RS)	96	5	.84	.50	.64
Impaired Self-Reference (ISR)	89	10	.89	.46	.64
Reduced Self-Awareness (ISR-RSA)	91	5	.84	.53	.66
Other Directedness (RSA-OD)	94	5	.76	.40	.54
Tension Reducing	90	10	.82	.34	.53

Behaviors (TRB)					
Validity Scales					
Response Level (RL)	93	8	.82	.35	.53
Atypical Responding (ATR)	89	8	.80	.34	.52

Criterion Validity

Direct logistic regression was performed on a subset of the study sample (n = 14) to assess whether the TSI-2 post-traumatic stress factor score predicted outcome (PTSD vs. No PTSD) on the Clinician Administered PTSD Scale (CAPS). Because the CAPS is well established within the field of traumatology and has become a standard criterion measure for research related to PTSD, scores on the CAPS were considered to be representative of the construct of PTSD (Weathers, Keane, & Davidson, 2001). However, CAPS data were only provided for 14 of the TSI-2 respondent cases, thus the following analysis was exploratory in nature.

The logistic regression model containing the post-traumatic stress disorder factor score approached statistical significance, χ^2 (1, N = 13) = 4.03, p = .05, indicating that the model was able to distinguish between individuals whose CAPS score resulted in a diagnosis of PTSD and those whose CAPS score did not result in a PTSD diagnosis. The model explained between 26.6% (Cox and Snell R square) and 35.6% (Nagelkerke R square) of the variance in PTSD diagnosis status, and correctly classified 69.2% of cases. The Hosmer-Lemeshow Goodness of Fit Test supported the model's utility (p = .66; statistical significance would indicate poor model fit).

ATR Scale Associations

The atypical responding (ATR) scale was designed to assess both for overreporting of PTSD symptoms and for overreporting of symptomatology in general. This was demonstrated in the TSI-2 standardization sample such that elevated ATR scores were associated with elevations on each of the four TSI-2 factors (Briere, 2011). To examine whether the ATR scale functions similarly within the study sample, Pearson product-moment correlations between the ATR scale score and factor scores were examined.

As expected, the ATR scale was strongly positively correlated with all four TSI-2 factors. The strongest correlation was detected between the ATR and posttraumatic stress disorder (TRAUMA) factor, $r = .71$, $n = 95$, $p<.001$, indicating that higher ATR scores were associated with higher posttraumatic stress scores. The externalization (EXT) factor was also strongly correlated with the ATR scale ($r = .70$, $n = 93$, $p<.001$), as were the somatization (SOM; $r = .66$, $n = 97$, $p<.001$) and self-disturbance (SELF; $r = .66$, $n = 94$, $p<.001$) factors.

Percent Invalidated by ATR and RL Cutoff Score

The TSI-2 manual provides the raw score means, standard deviations, and percent invalidated by the raw-score ATR cut-off of 15 for a sample of incarcerated women, the combined clinical validity (CCV) sample, and a subset of the CCV sample with PTSD diagnoses. To examine face-value differences in the percent of profiles invalidated within the study sample, an adapted table is provided below (study sample data are reflected in the last row of the table). The study sample yielded an ATR raw score mean of 5.98 (*SD*

= 5.17), and a total of 6.2% of the sample profiles (n = 6) were invalidated by the ATR raw score cutoff of 15. Refer to the contrast analyses section for statistical comparisons of the study and standardization samples.

Table 3

ATR Scale Means, Standard Deviations, and Percent Invalidated by Cutoff Score of 15 in Incarcerated and Clinical Samples

Sample	n	Raw Score *M*(*SD*)	% invalidated by cutoff score of 15
Incarcerated women	125	--	4.0
CCV sample, total	125	--	4.8
CCV sample, PTSD subsample	55	--	10.9
Culturally diverse immigrants with histories of trauma	**97**	**5.98(5.17)**	**6.2**

Note. Psychological Assessment Resources (PAR) does not allow for the publication of TSI-2 standardization sample raw scores. Please refer to the TSI-2 manual for this information.

Similar CCV sample invalid profile percentages are not available for the RL scale; however the TSI-2 manual indicates that approximately 4% of the general standardization sample was invalidated by the recommended T-score cutoff of 75. The immigrant sample yielded a similar rate, with 4.3% of the study sample RL scores falling above a T-score of 75.

Factor Analysis

A confirmatory factor analyses (CFA) was conducted to assess the extent to which the factor structure identified in the standardization sample generalized to the study sample. All scales and subscales loaded significantly (p<.001) onto their respective

factors (loadings ranged from .78 to .90 on the self-disturbance factor; from .66 to .91 on the posttraumatic stress factor; from .35 to .88 on the externalization factor; and from .82 to .97 on the somatization factor). Consistent with the model presented in the TSI-2 manual, the four factors were allowed to correlate and the subsequent correlations were all high (ranging from .74 to .97) and statistically significant ($p<.001$). The strong correlations between factors suggest that the factors were not independent within the study sample. The Chi-square value for the overall model fit was significant, χ^2 (129) = 324.9, p <.001, suggesting a lack of fit between the hypothesized model and the study sample data. However, because of the sensitivity of χ^2 in large samples (Kline, 1998), other fit indices were also assessed. Examination of these indices revealed poor model fit with AGFI = .66, GFI = .74, NFI = .80 (GFI and NFI values greater than 0.90 indicate good model fit; Marsh, Balla, & McDonald, 1988), CFI = .87, PCLOSE = .00 (PCLOSE values less than 0.05 are indicative of poor or no model fit), and RMSEA = .13 (RMSEA values greater than 0.10 strongly suggest that the model fit is unsatisfactory; Browne & Cudeck, 1993).

Given the poor model fit of the previously identified four-factor TSI-2 structure, an exploratory factor analysis (using principle components analysis) was performed on the TSI-2 scale scores of the study sample. Prior to interpretation, the suitability of data for factor analysis was assessed. The Kaiser-Meyer Olkin value was .91, exceeding the accepted recommended value of .6. In addition, Bartlett's Test of Sphericity was statistically significant ($p<.01$), indicating that the data were appropriate for factor analysis. Factor loadings less than .30 were suppressed from extraction, and Oblimin oblique rotation was applied because it was expected that factors will be correlated (as

they were in the TSI-2 validation study; Briere, 2011). Principal components analysis revealed the presence of three components with eigenvalues exceeding 1, explaining 56.6%, 7.4%, and 5.6% of the variance, respectively (69.6% of the variance was explained cumulatively by these three factors). However, the scree plot displayed a break after the first factor, suggesting a lack of factor differentiation. A parallel analysis also supported a one-factor model, with only one of the eigenvalues exceeding the eigenvalues in a randomly generated dataset of equal size (i.e., 97 participants and 24 variables). An examination of the pattern matrix revealed that 19 scales loaded above .4 on factor one, 4 scales loaded above .4 on factor two, and 3 scales loaded above .4 on factor three. Three or more items loading above .4 is considered optimal for factor retention. As expected, the three factors were correlated (factors one and two exhibited the highest correlation, with a .5 correlation coefficient). After examining the totality of factor retention rules, it appears that the majority of the sample data fall into one large factor, with only a few scales falling into factors two (the intrusive experiences scales and the defensive avoidance scales) and three (sexual concerns, dysfunctional sexual behavior, and suicidal behavior). The remaining 17 scales loaded strongly onto factor one. This is not consistent with the original standardization sample's four-factor model and suggests that the study sample did not exhibit clear factor differentiation.

Contrast Analyses

To determine whether the study sample of culturally diverse immigrants differed meaningfully from the TSI-2 normative sample, independent-samples *t*-tests were conducted to assess for statistical differences in scale, subscale, and factor scores. The TSI-2 normative data are stratified by age group and sex, thus the study sample was

assigned to sex- and age-matched categories for purposes of comparison. However, the TSI-2 data stratification results in two age subgroups: 18-54 and 55-90; and the current sample only yielded five individuals who were over the age of 55. Therefore comparisons were drawn only for individuals who were in the 18-54 age-group (by sex; 55 females and 37 males). Publically available TSI-2 data consist of t-score means and standard deviations, so the study sample data were converted to t-scores using the TSI-2 conversion manual to facilitate comparison between the study and standardization samples.

Female study sample vs. female standardization sample. Females under the age of 55 within the study sample (n = 55) were compared with the appropriate TSI-2 standardization sample of females between the ages of 18 and 55 (N = 185). The culturally diverse immigrant sample differed significantly from the standardization sample on 25/30 scale, subscale, and factor comparisons (see Table 4 for specific values). In all cases of statistically significant differences, the study sample yielded higher (i.e., more symptoms reported) scores than the standardization sample with the exception of the RL validity scale elevation, which indicates that the study sample was more hesitant to endorse common symptomatology than the standardization sample. The five scales or subscales on which the study sample did *not* differ significantly from the standardization sample were anger, sexual disturbance (clinical scale), dysfunctional sexual behavior (subscale), rejection sensitivity (subscale), and reduced self-awareness (subscale). This pattern of elevations was not unexpected, as the female TSI-2 standardization sample included individuals with and without trauma histories and the current study sample was entirely comprised of individuals with histories of trauma. Thus the elevation pattern

indicates that culturally diverse female immigrants with trauma history exhibit elevations on many scales intended to gauge trauma symptomatology (as would be expected). Refer to the TSI-2 clinical sample comparisons for statistical comparisons of the standardization samples with trauma history and the culturally diverse immigrant sample.

Table 4

Study Sample vs. Standardization Sample (Females; Ages 18-54)

Scale, Subscale, or Factor	Standardization *M* (*SD*)	Sample *M* (*SD*)	*t(df)*	*p*	Cohen's *d*
Clinical Scales					
Anxious Arousal (AA)	--	59.4 (10.8)	5.97(237)	<.01*	.90
Anxiety (AA-A)	--	60.0 (11.0)	6.32(237)	<.01*	.95
Hyperarousal (AA-H)	--	57.9 (11.2)	4.97(237)	<.01*	.74
Depression (D)	--	56.6 (9.7)	4.36(238)	<.01*	.67
Anger (ANG)	--	52.9 (9.9)	1.89(238)	.06	.29
Intrusive Experiences (IE)	--	62.7 (11.6)	7.85(237)	<.01*	1.17
Defensive Avoidance (DA)	--	61.2 (10.1)	7.33(238)	<.01*	1.11
Dissociation (DIS)	--	58.6 (14.0)	5.07(238)	<.01*	.71
Somatic Preoccupations (SOM)	--	56.8 (14.0)	4.0 (238)	<.01*	.56
Pain (SOM-P)	--	55.7 (13.0)	3.37(238)	<.01*	.48
General (SOM-G)	--	56.8 (13.9)	3.97(238)	<.01*	.56
Sexual Disturbance (SXD)	--	51.5 (10.2)	.91(237)	.36	.14
Sexual Concerns (SXD- SC)	--	53.3 (12.5)	1.96(237)	.05*	.28
Dysfunctional Sexual Behavior (SXD-DSB)	--	48.8 (6.1)	.92(238)	.36	.16

Suicidality (SUI)	--	54.6 (13.2)	2.87(238)	<.01*	.41
Ideation (SUI-I)	--	53.8 (11.6)	2.39(238)	.02*	.35
Behavior (SUI-B)	--	54.7 (14.1)	2.79(238)	<.01*	.38
Insecure Attachment (IA)	--	54.2 (9.5)	2.79(238)	<.01*	.43
Relational Avoidance (IA-RA)	--	55.8 (9.6)	3.81(238)	<.01*	.59
Rejection Sensitivity (IA-RS)	--	52.3 (10.2)	1.42(237)	.16	.22
Impaired Self-Reference (ISR)	--	53.4(11.7)	2.11(236)	.04*	.31
Reduced Self Awareness (ISR-RSA)	--	52.5 (10.7)	1.63(236)	.10	.25
Other Directedness (ISR_OD)	--	53.7 (12.1)	2.29(238)	.02*	.33
Tension Reducing Behaviors (TRB)	--	56.2 (12.3)	3.76(237)	<.01*	.55
Validity Scales					
Response Level (RL)	--	56.1 (9.6)	3.93(238)	<.01*	.61
Atypical Responding (ATR)	--	71.8 (20.0)	10.85(238)	<.01*	1.36
Factors					
SELF	--	55.2 (10.3)	3.34(236)	<.01*	.51
TRAUMA	--	61.8 (11.6)	7.35 (237)	<.01*	1.09
EXT	--	54.3(11.0)	2.72 (236)	<.01*	.41
SOM	--	56.8(14.0)	4.0 (238)	<.01*	.56

Note. Psychological Assessment Resources (PAR) does not allow for the publication of TSI-2 standardization sample t-scores. Please refer to the TSI-2 manual for this information.

Male study sample vs. male standardization sample. Males under the age of 55 within the study sample (n = 37) were compared with the corresponding TSI-2 standardization sample of males between the ages of 18 and 55 (N = 159). The culturally diverse immigrant sample differed significantly from the standardization sample on 11/30 scale, subscale, and factor comparisons (see Table 5 for specific values). Males in the study sample exhibited elevations on trauma-related symptom scales including: anxious arousal (and associated subscales), depression, intrusive experiences, defensive avoidance, dissociation, and suicidal behavior. The immigrant sample also exhibited statistically significant elevations on both validity scales and the posttraumatic stress factor. This elevation pattern was not unexpected, as the male standardization sample included individuals with and without trauma histories (i.e., the standardization sample scale means would be expected to be lower than those drawn from a sample entirely comprised of trauma survivors).

Table 5

Study Sample vs. Standardization Sample (Males; Ages 18-54)

Scale/Subscale/Factor	Standardization *M* (*SD*)	Sample *M* (*SD*)	*t(df)*	*p*	Cohen's *d*
Clinical Scales					
Anxious Arousal (AA)	--	59.2 (11.4)	4.96 (194)	<.01*	.87
Anxiety (AA-A)	--	59.7 (10.4)	5.27 (194)	<.01*	.95
Hyperarousal (AA-H)	--	58.2 (11.7)	4.40 (193)	<.01*	.76
Depression (D)	--	56.5 (11.0)	3.49 (194)	<.01*	.62
Anger (ANG)	--	49.7 (9.6)	.22 (194)	.82	.04
Intrusive Experiences (IE)	--	67.5 (11.6)	9.22 (193)	<.01*	1.61

Defensive Avoidance (DA)	--	64.2 (10.4)	7.64 (193)	<.01*	1.39
Dissociation (DIS)	--	55.9 (11.0)	3.20 (194)	<.01*	.56
Somatic Preoccupations (SOM)	--	52.1 (9.1)	1.17 (194)	.24	.22
Pain (SOM-P)	--	50.7 (8.3)	.34 (194)	.73	.07
General (SOM-G)	--	52.6 (9.6)	1.57 (194)	.12	.29
Sexual Disturbance (SXD)	--	49.1 (9.2)	.49 (192)	.63	.09
Sexual Concerns (SXD- SC)	--	50.8 (10.0)	.43 (193)	.67	.08
Dysfunctional Sexual Behavior (SXD-DSB)	--	48.3 (8.1)	1.01 (192)	.31	.20
Suicidality (SUI)	--	53.5 (13.3)	1.62 (192)	.11	.27
Ideation (SUI-I)	--	51.6 (12.6)	.96 (193)	.34	.17
Behavior (SUI-B)	--	56.4 (16.4)	2.99 (193)	<.01*	.46
Insecure Attachment (IA)	--	52.7 (11.4)	1.41 (193)	.16	.25
Relational Avoidance (IA-RA)	--	51.7 (10.2)	.90 (192)	.37	.17
Rejection Sensitivity (IA- RS)	--	52.9 (11.7)	1.48 (194)	.14	.26
Impaired Self-Reference (ISR)	--	49.7 (10.0)	.16 (194)	.87	.03
Reduced Self Awareness (ISR-RSA)	--	48.9 (10.0)	.60 (194)	.55	.11
Other Directedness (ISR-OD)	--	50.7 (10.3)	.33 (194)	.74	.06
Tension Reducing Behaviors (TRB)	--	53.4 (11.6)	1.71 (194)	.09	.30
Validity Scales					
Response Level (RL)	--	55.4 (10.4)	2.86 (194)	<.01*	.52
Atypical Responding (ATR)	--	64.7 (17.8)	6.81 (194)	<.01*	1.02
Factors					
SELF	--	53.5 (10.8)	1.86 (193)	.06	.34
TRAUMA	--	63.3 (9.7)	7.24 (193)	<.01*	1.35
EXT	--	52.9 (13.3)	1.47 (192)	.14	.25

SOM	--	52.1 (9.1)	1.17 (194)	.24	.22

Note. Psychological Assessment Resources (PAR) does not allow for the publication of TSI-2 standardization sample t-scores. Please refer to the TSI-2 manual for this information.

Because the sample in the current study was expected to be most similar to the TSI-2's combined clinical validity (CCV) sample, independent-samples *t*-tests were also conducted to contrast the scale, subscale, and factor scores of the study's immigrant sample with three groups within the TSI-2 combined clinical validity sample (combat veterans, domestic abuse survivors, and sexual abuse survivors). These subgroups of the CCV sample include individuals with traumatic histories that are somewhat similar to those anticipated within the study's immigrant sample, such as victims of interpersonal violence, war trauma, and sexual assault. Thus, statistically comparing the two samples was intended to help determine whether the TSI-2 responses of individuals from other cultures differ significantly from those with (some) similar experiences in an American clinical sample. The sexual abuse survivor (n = 32) and domestic violence survivor (n = 31) clinical samples were entirely comprised of females, therefore only female participants were compared with these clinical samples (n = 55). The combat veteran clinical sample (n = 32) included both males and females, thus the entire study sample was used for comparison (N = 97).

Sexual abuse survivor clinical sample contrast analyses. Female participants in the current study were compared with the sexual abuse survivor clinical sample derived from the TSI-2 manual. The TSI-2 clinical sample was comprised entirely of females, was primarily Caucasian (75%), and had a mean age of 38.4 (SD = 14.7). The

comparison sub-sample drawn from the current study was comprised of 55 females and had a mean age of 36.7 (*SD* = 8.51). The culturally diverse immigrant sample differed significantly from the sexual abuse standardization sample on several scale, subscale, and factor comparisons (see Table 6 for specific values), however the direction of the differences varied. For example, the immigrant sample exhibited significantly lower scores (i.e., lower levels of reported symptomatology) than the sexual abuse survivor sample on four clinical scales/factors related to externalizing behaviors including anger, sexual disturbance (including both sexual disturbance subscales), suicidality (including both subscales), tension reducing behaviors, and the externalization factor. The elevations in the sexual abuse survivor sample are consistent with symptomatology associated with sexual violence (particularly the sexual disturbance scales), and would be expected given that the immigrant comparative sample did not all have histories of sexual trauma. The immigrant sample exhibited significantly higher scores (i.e., higher levels of symptomatology) on the general somatization subscale of the somatic preoccupations clinical scale. This was consistent with hypotheses related to elevated somatization symptoms among immigrant and non-western individuals (although the overall somatic concerns clinical scale and pain subscale were not significantly elevated). The immigrant sample also yielded significantly higher scores on the response level validity scale indicating that individuals in the sample may have been underreporting symptomatology.

Table 6

Study Sample vs. TSI-2 Survivors of Sexual Abuse Sample (females only)

Scale/Subscale/Factor	Sexual Abuse Survivors *M* (*SD*)	Sample *M* (*SD*)	*t(df)*	*p*	Cohen's *d*
Clinical Scales					
Anxious Arousal (AA)	--	59.4 (10.8)	.43(84)	.67	.09
Anxiety (AA-A)	--	60.0 (11.0)	1.38(84)	.17	.30
Hyperarousal (AA-H)	--	57.9 (11.2)	.53(84)	.60	.12
Depression (D)	--	56.6 (9.7)	.72(85)	.48	.16
Anger (ANG)	--	52.9 (9.9)	2.30(85)	.02*	.49
Intrusive Experiences (IE)	--	62.7 (11.6)	.13 (84)	.90	.03
Defensive Avoidance (DA)	--	61.2 (10.1)	1.57 (85)	.12	.34
Dissociation (DIS)	--	58.6 (14.0)	1.18 (85)	.24	.26
Somatic Preoccupations (SOM)	--	56.8(14.0)	1.52(85)	.13	.34
Pain (SOM-P)	--	55.7 (13.0)	1.50(85)	.14	.34
General (SOM-G)	--	56.8 (13.9)	2.31(85)	.02*	.54
Sexual Disturbance (SXD)	--	51.5 (10.2)	4.68(84)	<.01*	.98
Sexual Concerns (SXD- SC)	--	53.3 (12.5)	2.82(84)	<.01*	.62
Dysfunctional Sexual Behavior (SXD-DSB)	--	48.8 (6.1)	5.87(85)	<.01*	1.15
Suicidality (SUI)	--	54.6 (13.2)	2.17(85)	.03*	.46
Ideation (SUI-I)	--	53.8 (11.6)	2.03(85)	.05*	.43
Behavior (SUI-B)	--	54.7 (14.1)	2.08(85)	.04*	.44
Insecure Attachment (IA)	--	54.2 (9.5)	.51(85)	.61	.11
Relational Avoidance (IA-RA)	--	55.8 (9.6)	.72(85)	.47	.16
Rejection Sensitivity (IA- RS)	--	52.3 (10.2)	1.53(84)	.13	.35
Impaired Self-Reference (ISR)	--	53.4(11.7)	1.90(83)	.06	.42

Reduced Self Awareness (ISR-RSA)	--	52.5 (10.7)	1.83(83)	.07	.40
Other Directedness (ISR_OD)	--	53.7 (12.1)	1.73(85)	.09	.38
Tension Reducing Behaviors (TRB)	--	56.2 (12.3)	2.96(84)	<.01*	.63
Validity Scales					
Response Level (RL)	--	56.1 (9.6)	4.02(85)	<.01*	.92
Atypical Responding (ATR)	--	71.8 (20.0)	.34(85)	.73	.08
Factors					
SELF	--	55.2 (10.3)	1.11(83)	.27	.06
TRAUMA	--	61.8 (11.6)	.21(84)	.83	.05
EXT	--	54.3(11.0)	3.41(83)	<.01*	.70
SOM	--	56.8(14.0)	1.52(85)	.13	.34

Note. Psychological Assessment Resources (PAR) does not allow for the publication of TSI-2 standardization sample t-scores. Please refer to the TSI-2 manual for this information.

Domestic violence survivor clinical sample contrast analyses. Female participants in the current study were also compared with the domestic violence survivor clinical sample derived from the TSI-2 manual. The TSI-2 clinical sample (n = 31) was comprised entirely of females, was primarily Caucasian (80.6%), and had a mean age of 44.3 (SD = 16.2). The comparison sub-sample drawn from the current study was comprised of 55 females and had a mean age of 36.7 (SD = 8.5). The pattern of statistically significant differences among the two samples was similar to those observed within the sexual abuse survivor clinical sample (see Table 7). The culturally diverse immigrant sample exhibited lower scores (i.e., lower levels of reported symptomatology) on several scales and subscales related to externalizing behaviors including anger, sexual disturbances, dysfunctional sexual behavior, suicidal behavior, tension reducing behavior,

and the externalization factor (which is comprised of many of the elevated clinical scales and subscales). The immigrant sample exhibited significantly higher scores on the defensive avoidance subscale and on the response level validity scale. No other scales, subscales, or factors differed significantly among samples.

Table 7

Study Sample vs. TSI-2 Survivors of Domestic Violence Sample (females only)

Scale/Subscale/Factor	Domestic Violence Survivors *M* (*SD*)	Sample *M* (*SD*)	*t(df)*	*p*	Cohen's *d*
Clinical Scales					
Anxious Arousal (AA)	--	59.4 (10.8)	.83(83)	.41	.18
Anxiety (AA-A)	--	60.0 (11.0)	1.7(83)	.09	.38
Hyperarousal (AA-H)	--	57.9 (11.2)	.07(83)	.94	.02
Depression (D)	--	56.6 (9.7)	.16(84)	.87	.04
Anger (ANG)	--	52.9 (9.9)	3.34(84)	<.01*	.70
Intrusive Experiences (IE)	--	62.7 (11.6)	.31(83)	.76	.07
Defensive Avoidance (DA)	--	61.2 (10.1)	2.35(84)	.02*	.51
Dissociation (DIS)	--	58.6 (14.0)	.09(84)	.93	.02
Somatic Preoccupations (SOM)	--	56.8(14.0)	.98(84)	.33	.22
Pain (SOM-P)	--	55.7 (13.0)	1.27(84)	.21	.28
General (SOM-G)	--	56.8 (13.9)	.78 (84)	.44	.17
Sexual Disturbance (SXD)	--	51.5 (10.2)	2.09(83)	.04*	.44
Sexual Concerns (SXD- SC)	--	53.3 (12.5)	.65(83)	.52	.15
Dysfunctional Sexual Behavior (SXD-DSB)	--	48.8 (6.1)	3.66(84)	<.01*	.73
Suicidality (SUI)	--	54.6 (13.2)	2.22(84)	.03*	.46

Ideation (SUI-I)	--	53.8 (11.6)	1.94(84)	.06	.41
Behavior (SUI-B)	--	54.7 (14.1)	2.63(84)	<.01*	.55
Insecure Attachment (IA)	--	54.2 (9.5)	.74(84)	.46	.17
Relational Avoidance (IA-RA)	--	55.8 (9.6)	1.47(84)	.15	.33
Rejection Sensitivity (IA-RS)	--	52.3 (10.2)	.04(83)	.97	.01
Impaired Self-Reference (ISR)	--	52.5 (10.7)	.35(82)	.73	.16
Reduced Self Awareness (ISR-RSA)	--	52.5 (10.7)	.97(82)	.33	.21
Other Directedness (ISR_OD)	--	53.7 (12.1)	.36(84)	.72	.08
Tension Reducing Behaviors (TRB)	--	56.2 (12.3)	3.34(83)	<.01*	.70
Validity Scales					
Response Level (RL)	--	56.1 (9.6)	3.44 (84)	<.01*	.80
Atypical Responding (ATR)	--	71.8 (20.0)	.46 (84)	.06	.10
Factors					
SELF	--	55.2 (10.3)	.15(82)	.88	.03
TRAUMA	--	61.8 (11.6)	.71(83)	.48	.15
EXT	--	54.3(11.0)	3.45(82)	<.01*	.71
SOM	--	56.8(14.0)	.98(84)	.33	.22

Note. Psychological Assessment Resources (PAR) does not allow for the publication of TSI-2 standardization sample t-scores. Please refer to the TSI-2 manual for this information.

The observed elevations in externalizing behaviors in both TSI-2 female clinical samples raised the question of whether these differences were related to cultural factors (e.g., immigrant or nonwestern samples may be less likely to externalize in response to trauma) or to violence type (i.e. domestic violence survivors may be vulnerable to externalizing symptoms regardless of culture of origin). There was not a large enough

sexual abuse survivor subsample within the immigrant sample to facilitate meaningful comparisons, so the female domestic violence subset of the sample (n = 15) was compared to the TSI-2 domestic violence sample on specific externalization scales and subscales (scales and subscales on which differences were detected; see Table 8 for specific values). When comparisons were restricted to domestic violence survivors only, three of the externalizing behavior differences became non-significant (sexual disturbance, suicidality, and suicidal behavior) and four scale/factor scores remained significantly different (anger, dysfunctional sexual behavior, tension reducing behaviors, and the externalization factor). This may indicate that some externalizing behaviors (e.g. suicidality) are related to specific trauma types rather than to cultural differences, however the small sample size and large score variability in the current samples may have resulted in difficulties detecting existing differences.

Table 8

Externalizing Behaviors: Domestic Violence Study Subsample vs. TSI-2 Survivors of Domestic Violence Sample (females only)

Scale/Subscale/Factor	TSI-2 Domestic Violence Survivors *M* (*SD*)	Immigrant Domestic Violence Sample *M* (*SD*)	*t(df)*	*p*	Cohen's *d*
Clinical Scales					
Anger (ANG)	--	52.7 (7.9)	2.11(44)	.04*	.76
Sexual Disturbance (SXD)	--	51.2 (8.6)	1.43(44)	.16	.49
Dysfunctional Sexual Behavior (SXD-DSB)	--	48.5 (5.9)	2.10(44)	.04*	.75
Suicidality (SUI)	--	57.6 (15.5)	.86(44)	.40	.29

Behavior (SUI-B)	--	58.9 (18.8)	.92(44)	.36	.30
Tension Reducing Behaviors (TRB)	--	54.5 (13.5)	2.34(44)	.02*	.79
Factors					
EXT	--	54.1(8.6)	2.11(44)	.04*	.75

Note. Psychological Assessment Resources (PAR) does not allow for the publication of TSI-2 standardization sample t-scores. Please refer to the TSI-2 manual for this information.

Combat veterans clinical sample contrast analyses. Participants in the current study were also compared with the combat veteran clinical sample derived from the TSI-2 manual. The TSI-2 clinical sample (n = 32) was 87.5% male, primarily Caucasian (90.6%), and had a mean age of 33.8 (SD = 8.8). The study comparison sample was comprised of all participants (N = 97) and had a mean age of 35.8 (SD = 9.0). The immigrant sample exhibited significantly lower scores than the combat veteran sample on two clinical scales: anger and reduced self-awareness; and yielded higher scores on the response level validity scale (see Table 9 for specific values). No other scales, subscales, or factors differed significantly among samples.

Table 9

Study Sample vs. TSI-2 Combat Veterans Sample (males and females)

Scale/Subscale/Factor	Combat Veteran *M* (SD)	Sample *M* (*SD*)	*t(df)*	*p*	Cohen's *d*
Clinical Scales					
Anxious Arousal (AA)	--	59.3 (11.0)	.77(121)	.44	.16
Anxiety (AA-A)	--	59.9 (10.7)	.56(121)	.58	.12
Hyperarousal (AA-H)	--	58.0 (11.3)	1.86(120)	.07	.39

Depression (D)	--	56.4 (10.3)	.52(122)	.60	.11
Anger (ANG)	--	51.8 (9.8)	4.06(121)	<.01*	.82
Intrusive Experiences (IE)	--	64.8 (11.8)	.91(121)	.36	.18
Defensive Avoidance (DA)	--	62.4 (10.3)	.46(121)	.64	.09
Dissociation (DIS)	--	57.5 (12.8)	1.59(122)	.16	.32
Somatic Preoccupations (SOM)	--	54.9 (12.4)	.32(122)	.75	.07
Pain (SOM-P)	--	53.7 (11.6)	.09(122)	.93	.02
General (SOM-G)	--	55.1 (12.5)	.39(122)	.69	.08
Sexual Disturbance (SXD)	--	50.6 (9.8)	.14(119)	.89	.03
Sexual Concerns (SXD- SC)	--	52.3 (11.6)	.20(120)	.84	.04
Dysfunctional Sexual Behavior (SXD-DSB)	--	48.6 (6.9)	1.04(120)	.30	.20
Suicidality (SUI)	--	54.2 (13.1)	.04(120)	.97	.01
Ideation (SUI-I)	--	52.9 (12.0)	.27(121)	.79	.05
Behavior (SUI-B)	--	55.3 (14.9)	.49(122)	.63	.10
Insecure Attachment (IA)	--	53.6 (10.3)	.28(121)	.78	.06
Relational Avoidance (IA-RA)	--	54.2 (10.0)	.44(120)	.66	.09
Rejection Sensitivity (IA-RS)	--	52.2 (10.8)	.93(120)	.36	.19
Impaired Self-Reference (ISR)	--	51.9 (11.2)	.78(120)	.44	.16
Reduced Self Awareness (ISR-RSA)	--	51.0 (10.5)	2.30(120)	.02*	.46
Other Directedness (ISR_OD)	--	52.5 (11.5)	.90(120)	.37	.19
Tension Reducing Behaviors (TRB)	--	55.1 (12.0)	1.51(120)	.13	.30
Validity Scales					
Response Level (RL)	--	55.8 (9.9)	4.51(122)	<.01*	1.04
Atypical Responding (ATR)	--	69.0 (19.0)	1.30(122)	.20	.28
Factors					
SELF	--	54.5 (10.4)	.55(119)	.58	.11

TRAUMA	--	62.5 (10.9)	.61(119)	.54	.12
EXT	--	53.5 (12.0)	1.71(122)	.09	.35
SOM	--	54.9 (12.4)	.32(122)	.75	.07

Note. Psychological Assessment Resources (PAR) does not allow for the publication of TSI-2 standardization sample t-scores. Please refer to the TSI-2 manual for this information.

Influence of Demographic Variables

Analyses of variance (ANOVAs) were conducted to determine whether raw TSI-2 factor, scale, and subscale scores varied systematically as a function of demographic variables such sex, age, and cultural group. The sample was not large enough to define cultural groups specifically, so world regions were used as a proxy for cultural group and ethnicity. The groups were based generally on the United Nations regional groups and were defined as (1) Latin America and Caribbean (34% of the sample), (2) Africa (19.6%), (3) South and East Asia (17.5%), (4) Middle East (7.2%), and (5) Eastern Europe (14.4%). Country of origin information was not provided for seven TSI-2 respondents (7.2%). A 2 (sex) x 2 (age group: 18-54, 55 years and older) ANOVA was originally planned based on the TSI-2 standardization sample data indicating significant differences based on these variable categories. However, only five participants in the study sample were above the age of 55, therefore this analysis was not feasible.

A 5 (cultural group) x 2 (sex) ANOVA was conducted to assess for main effects of sex and cultural group across scales, as well as to examine significant interactions between variables. Raw mean and standard deviation scores (not t scores) were used in the ANOVA analyses.

No interactions or main effects of regional group were detected for any scale or factor scores (see Table 10 for specific values), however a main effect of sex was detected for three clinical scales, one validity scale, and two factors. All sex effects reflected a similar pattern, such that female participants exhibited higher scores (i.e., more symptomatology) than male participants.

With regard to clinical scales, a main effect of sex was detected on the depression scale, such that females (M = 17.6, SD = 8.3) exhibited significantly higher depression scale scores than males (M = 14.4, SD = 7.9), F (1, 80) = 4.9, p = .03, partial eta squared = .06. A main effect of sex was also detected on the anger scale, and females exhibited significantly higher anger scale scores (M = 11.6, SD = 7.4) than males (M = 8.7, SD = 6.4), F (1, 80) =5.2, p = .03, partial eta squared = .06. Lastly, the suicidality scale showed a similar gender pattern, such that females exhibited significantly higher suicidality scale scores (M = 5.1, SD = 6.1) than males (M = 3.0, SD = 4.5), F (1, 78) = 4.0, p = .05, partial eta squared = .05. With regard to validity scales, A main effect of sex was detected on the atypical responding (ATR) scale, such that females exhibited significantly higher ATR scale scores (M = 7.0, SD = 5.3) than males (M = 5.1, SD = 4.8), F (1, 80) = 5.1, p = .03, partial eta squared = .06.

With regard to factor scores, a main effect of sex was detected on the self-disturbance factor such that females exhibited significantly higher self-disturbance factor scores (M = 42.9, SD = 21.8) than males (M = 34.3, SD = 19.9), F (1, 77) = 5.6, p = .02, partial eta squared = .07. A similar pattern was observed on the externalization factor, such that females exhibited significantly higher externalization factor scores (M = 29.8,

SD = 21.0) than males (*M* = 22.1, *SD* = 17.2), *F* (1, 76) = 5.9, *p* = .02, partial eta squared = .07.

Table 10

Influence of Demographic Variables: Regional Group and Age Group Comparisons

Scales/Subscales/ Factors	Interaction: Region x Sex	Region Main Effect	Gender Main Effect
Clinical Scales			
Anxious Arousal (AA)	No *F* (4,79) = .69, *p* = .60	No *F* (4,79) = .33, *p* = .86	No *F*(1,79) = 1.18, *p* = .28
Depression (D)	No *F* (4,79) = .69, *p* = .60	No *F* (4,80) = .34, *p* = .85	Yes *F*(1,80) = 4.85, *p* = .03
Anger (ANG)	No *F* (4,80) = 1.19, *p* = .32	No *F* (4,80) = .78, *p* = .54	Yes *F* (1,80) = 5.20, *p* = .03
Intrusive Experiences (IE)	No *F* (4,78) = 1.58, *p* = .19	No *F* (4,78) = 1.40, *p* = .24	No *F* (1,78) =1.41, *p* = .24
Defensive Avoidance (DA)	No *F* (4,79) = 1.10, *p* = .36	No *F* (4,79) = 1.67, *p* = .17	No *F* (1,79) = 1.57, *p* = .21
Dissociation (DIS)	No *F* (4,80) = 1.27, *p* = .29	No *F* (4,80) = .94, *p* = .45	No *F* (1,80) = 2.35, *p* = .13
Somatic Preoccupations (SOM)	No *F* (4,80) = 1.14, *p* = .35	No *F* (4,80) = .47, *p* = .76	No *F* (1,80) = .54, *p* = .46
Sexual Disturbance (SXD)	No *F* (4,77) = .32, *p* = .87	No *F* (4,77) = 1.47, *p* = .22	No *F* (1,77) = 2.37, *p* = .13

Suicidality (SUI)	No *F* (4,78) = 1.13, *p* = .34	No *F* (4,78) = 1.85, *p* = .13	Yes *F* (1,78) = 3.97, *p* = .05
Insecure Attachment (IA)	No *F* (4,79) = .81, *p* = .52	No *F* (4,79) = .71, *p* = .58	No *F* (1,79) = .57, *p* = .06
Tension Reducing Behaviors (TRB)	No *F* (4,79) = .72, *p* = .58	No *F* (4,79) = .31, *p* = .87	No *F* (1,79) = 3.14, *p* = .08
Validity Scales			
Response Level (RL)	No *F* (4,80) = 1.01, *p* = .41	No *F* (4,80) = .36, *p* = .83	No *F* (1,80) = .02, *p* = .89
Atypical Responding (ATR)	No *F* (4,80) = .81, *p* = .52	No *F* (4,80) = 1.32, *p* = .27	Yes *F* (1,80) = 5.05, *p* = .03
Factors			
SELF	No *F* (4,77) = .85, *p* = .50	No *F* (4,77) = .55, *p* = .70	Yes *F* (1,77) = 5.55, *p* = .02
TRAUMA	No *F* (4,78) = 1.36, *p* = .25	No *F* (4,78) = 1.07, *p* = .38	No *F* (1,78) = 1.95, *p* = .17
EXT	No *F* (4,76) = 1.01, *p* = .41	No *F* (4,76) = 1.13, *p* = .35	Yes *F* (1,76) = 5.94, *p* = .02

Classification by Clinical Range

The developers of the TSI-2 provided information related to the percentage of individuals within six distinct standardization samples that were classified as “normal,”

"problematic," and "clinically elevated" for each scale, subscale, and factor. The samples for which this information is currently available include: combat veterans (*n* = 32), individuals with a diagnosis of borderline personality disorder (*n* = 30), survivors of sexual abuse (*n* = 32), survivors of domestic violence (*n* = 31), incarcerated women (*n* = 125), and the standardization sample (*n* = 678). The present study modified the table (in the interest of space, subscales and data related to samples not examined in this paper were omitted) and added data related to a population of culturally diverse immigrants with trauma histories to the (see Table 11).

Table 11

Percentage of TSI-2 Standardization, TSI-2 Clinical, and Culturally Diverse Immigrant Samples Scoring within Suggested Clinically Relevant T-Score Ranges

Scale/Subscale/Factor	Clinical range (*t*-score)		
	Normal (0-59)	Problematic (60-64)	Clinically Elevated (65+)
Factors			
Self-Disturbance (SELF)			
% in the standardization sample	82.6	7.7	9.7
% in the combat veteran sample	68.8	15.6	16.6
% in the sexual abuse survivor sample	53.1	9.4	37.5
% in the domestic violence survivor sample	54.8	22.6	22.6
% in the immigrant trauma survivor sample	66.3	12.4	21.3
Posttraumatic Stress (TRAUMA)			
% in the standardization sample	81.6	8.4	10.0
% in the combat veteran sample	31.3	15.6	53.1
% in the sexual abuse survivor sample	43.8	9.7	45.2
% in the domestic violence survivor sample	61.6	11.2	27.2
% in the immigrant trauma survivor	40.4	11.1	48.5

sample			
Externalization (EXT)			
% in the standardization sample	83.3	6.3	10.3
% in the combat veteran sample	62.5	12.5	25.0
% in the sexual abuse survivor sample	46.9	0.0	53.1
% in the domestic violence survivor sample	45.2	9.7	45.2
% in the immigrant trauma survivor sample	71.7	9.9	18.4
Somatization (SOMA)			
% in the standardization sample	80.2	10.5	9.3
% in the combat veteran sample	68.8	12.5	18.8
% in the sexual abuse survivor sample	65.6	15.6	18.7
% in the domestic violence survivor sample	61.3	12.9	25.8
% in the immigrant trauma survivor sample	63.0	7.6	29.4
Clinical Scales			
Anxious Arousal (AA)			
% in the standardization sample	81.7	9.3	9.0
% in the combat veteran sample	37.5	21.9	40.6
% in the sexual abuse survivor sample	50.0	9.4	40.6
% in the domestic violence survivor sample	45.2	22.6	32.2
% in the immigrant trauma survivor sample	42.9	19.7	37.4
Depression (D)			
% in the standardization sample	81.4	7.2	11.4
% in the combat veteran sample	56.3	15.6	28.1
% in the sexual abuse survivor sample	53.1	6.3	40.6
% in the domestic violence survivor sample	45.2	32.3	22.6
% in the immigrant trauma survivor sample	60.0	14.0	26.0
Anger (ANG)			
% in the standardization sample	84.2	4.9	10.9
% in the combat veteran sample	53.1	9.4	37.5
% in the sexual abuse survivor sample	50.0	6.3	43.7
% in the domestic violence survivor sample	45.2	9.7	45.2
% in the immigrant trauma survivor	80.2	9.9	9.9

sample			
Intrusive Experiences (IE)			
% in the standardization sample	82.9	6.9	10.2
% in the combat veteran sample	25.0	12.5	62.5
% in the sexual abuse survivor sample	40.6	9.4	50.0
% in the domestic violence survivor sample	45.2	3.2	51.6
% in the immigrant trauma survivor sample	35.2	11.0	53.8
Defensive Avoidance (DA)			
% in the standardization sample	81.3	9.1	9.6
% in the combat veteran sample	31.3	18.8	50.0
% in the sexual abuse survivor sample	46.9	25.0	28.1
% in the domestic violence survivor sample	51.6	19.4	29.0
% in the immigrant trauma survivor sample	31.9	18.6	49.5
Dissociation (DIS)			
% in the standardization sample	82.3	8.3	9.4
% in the combat veteran sample	46.9	21.9	31.3
% in the sexual abuse survivor sample	40.6	12.5	46.9
% in the domestic violence survivor sample	54.8	12.9	32.3
% in the immigrant trauma survivor sample	66.2	8.7	25.0
Somatic Preoccupations (SOM)			
% in the standardization sample	80.2	10.5	9.3
% in the combat veteran sample	68.8	12.5	18.8
% in the sexual abuse survivor sample	65.6	15.6	18.7
% in the domestic violence survivor sample	61.3	12.9	25.8
% in the immigrant trauma survivor sample	63.0	7.6	29.4
Sexual Disturbance (SXD)			
% in the standardization sample	83.9	7.2	8.8
% in the combat veteran sample	81.3	0.0	18.8
% in the sexual abuse survivor sample	37.5	12.5	50.0
% in the domestic violence survivor sample	58.1	12.9	29.0
% in the immigrant trauma survivor	76.3	15.8	7.9

sample			
Suicidality (SUI)			
% in the standardization sample	88.5	3.4	8.1
% in the combat veteran sample	78.1	6.3	15.6
% in the sexual abuse survivor sample	59.4	3.1	37.5
% in the domestic violence survivor sample	61.3	3.2	35.5
% in the immigrant trauma survivor sample	75.5	2.3	22.2
Insecure Attachment (IA)			
% in the standardization sample	80.1	10.6	9.3
% in the combat veteran sample	75.0	9.4	15.6
% in the sexual abuse survivor sample	56.3	28.1	15.6
% in the domestic violence survivor sample	71.0	12.9	16.1
% in the immigrant trauma survivor sample	71.3	13.3	15.4
Impaired Self Reference (ISR)			
% in the standardization sample	82.6	7.7	9.7
% in the combat veteran sample	68.8	12.5	18.8
% in the sexual abuse survivor sample	43.8	21.9	34.4
% in the domestic violence survivor sample	51.6	19.4	29.0
% in the immigrant trauma survivor sample	73.2	6.8	20.0
Tension Reduction Behavior (TRB)			
% in the standardization sample	83.6	6.9	9.4
% in the combat veteran sample	53.1	6.3	40.6
% in the sexual abuse survivor sample	40.6	6.3	53.1
% in the domestic violence survivor sample	32.3	16.1	51.6
% in the immigrant trauma survivor sample	68.1	11.0	20.9

Discussion

The TSI-2 can provide useful information in the context of immigration evaluations due to the breadth of symptomology addressed, the inclusion of validity

scales, and the efficiency of administration. This goal of the present study was to examine the psychometric properties of TSI-2 within a sample of immigrants with trauma histories, in order to determine whether the TSI-2 is appropriate for use with immigrant and non-western populations. Overall, the results of the present study provide preliminary data suggesting that the TSI-2 is suitable for use with individuals from a variety of cultural backgrounds.

Reliability and Validity

The TSI-2 demonstrated excellent internal consistency on all but one subscale, suggesting that the scales and subscales are, for the most part, measuring cohesive underlying constructs within the study sample. Criterion validity was also assessed within a small subset of the sample, and results indicated that the scores on the posttraumatic stress factor (which is comprised of clinical scales and subscales gauging common PTSD symptoms) of the TSI-2 predicted PTSD diagnostic classification using the "gold standard" trauma assessment measure (the CAPS). This suggests that the TSI-2 was able to detect the presence of PTSD symptoms within the study sample and provided a better-than-chance classification of respondents by CAPS-generated PTSD diagnosis status. Further examination is warranted to demonstrate the cross-cultural reliability (e.g., test-retest reliability) and validity (more extensive validity testing); however these data suggest that the TSI-2 provides a reliable and valid gauge of trauma-related symptomatology within cross-cultural immigrant samples.

Factor Structure

The four-factor model identified in the TSI-2 standardization samples did not emerge within the study sample during confirmatory factor analysis (CFA). It had been

hypothesized that a three-factor solution (by which somatization would be subsumed under the posttraumatic stress factor) would be detected in this sample; however that hypothesis was not supported by the results of an exploratory factor analysis (EFA). The data suggest that the TSI-2 may be measuring one general "distress" factor within the study sample; however it is possible that with a larger sample a three-factor model (suggested by some factor extraction tests) would emerge more clearly. Results from the EFA suggest that a three-factor model, if detected, would be composed of one large psychological distress factor (including the somatization scales), a trauma-specific factor (including intrusive experiences and defensive avoidance scales), and an externalization factor (including both sexual disturbance scales and the suicidal behavior subscale).

Influence of Demographic Variables

One important aim of the present study was to gather preliminary data regarding the need (or lack thereof) for separate immigrant or non-western TSI-2 norms. To examine this issue, study respondents were divided into five regional groups ((1) Latin America and Caribbean, (2) Africa, (3) South and East Asia, (4) Middle East, and (5) Eastern Europe), and analyses were conducted to identify any culturally influenced differences on the TSI-2 scales, subscales, or factors. No significant effects of regional group were detected on any of the TSI-2 indicators, suggesting that regional group does not significantly impact scores on the TSI-2.

Main effects of sex were detected on three clinical scales (anger, depression, and suicidality), one validity scale (ATR), and two factors (self-disturbance and externalization). All sex effects reflected a similar pattern, such that female participants exhibited higher scores (i.e., more symptomatology) than male participants. Sex

differences were also detected in the original TSI-2 normative sample (resulting in norm stratification), and the results of this study suggest that the current model of TSI-2 norm stratification (i.e., sex but not racial/ethnic stratification)is appropriate within an immigrant sample as well (Briere, 2011).

Contrast Analyses

The results of the contrast analyses provided support for the utility of the TSI-2 within the study sample. When compared with the general (not trauma-specific) standardization sample, both the male and female immigrant sample subsets showed elevations on several TSI-2 scales, which would be expected in a sample comprised entirely of trauma survivors. This indicates that the TSI-2 is sensitive enough to detect clinical scale elevations in the study sample.

When compared with the TSI-2 clinical (i.e., trauma survivor) samples, the immigrant sample showed many fewer statistically significant differences, indicating that the study sample's reported levels of trauma-related symptomatology typically did not differ significantly from the levels reported in the standardization sample of trauma survivors. Interestingly, the lack of differentiation between trauma survivor samples included the somatization scales (with the exception of one elevation on the general somatization subscale when compared with the sexual abuse survivor sample). The data did not support the hypothesis that individuals within the immigrant sample would report more somatic manifestations of trauma than their counterparts in the standardization trauma-survivor samples. This finding was somewhat surprising, given the extant literature suggesting that individuals from non-western cultures tend to present with somatic reactions to trauma (Renner, Salem, & Ottomeyer, 2007). In fact, it has been argued that

intrusion and hyperarousal symptoms manifest comparably across cultures, but that somatization symptoms are likely to be more prominent than avoidance or dissociation symptoms in some non-western cultural groups (Stamm & Friedman, 2000). Somatic "replacements" for western PTSD symptoms have been reported in individuals from Viet Nam (Matkin, Nickles, Demos, & Demos, 1996); India, China, and Africa (Mumford et al., 1991); Cambodia and Laos (Hinton, Hinton, Eng, & Choung, 2012; Mattson, 1993); Northern Africa (Vontress & Epp, 2000); and the Philippines and Mien (Lin, Carter, & Kleinman, 1985). The lack of somatization elevations in the current study sample may be related to levels of acculturation within the sample, which was not measured. For example, a fairly large proportion of study respondents (30.9%) were involved in Extreme Hardship Waiver cases, indicating that they were either legal permanent residents or naturalized U.S. citizens. This suggests lengthy residence in the United States prior to TSI-2 completion, and thus identification with the majority culture could be reducing somatization symptomatology. While U.S. residency and some degree of acculturation is consistent with what would be expected in this type of immigration evaluation, future research should aim to measure acculturation (and length of time in the United States) and to determine whether these factors impact reported somatization levels.

One interesting exception to the lack of clinical sample differentiation was detected on scales related to externalizing behaviors. Females in the immigrant sample exhibited significantly lower levels of externalizing symptoms (e.g., sexual disturbances, anger, tension reducing behaviors) than their counterparts in the sexual abuse survivor and domestic violence survivor TSI-2 clinical sample. These differences were not

detected (with the exception of anger) when both sexes were compared to the combat veteran sample. These results raised the question of whether differences in externalization were related to cultural manifestations of symptomatology (i.e., perhaps women from non-western cultures are less likely to externalize or to report externalizing behaviors due to societal expectations) or to violence type (i.e., perhaps female survivors of domestic violence are more likely to externalize regardless of culture of origin). To examine this question further, a small subset of the immigrant sample identified as domestic violence survivors was compared with the TSI-2 domestic violence survivor sample on relevant externalization scales. Results of this comparison suggested that some externalizing differences became insignificant between domestic violence groups (specifically suicidality indicators and the overall sexual disturbance clinical scale) but other differences remained significant (such as the overall externalization factor, tension reducing behaviors, and anger). Further exploration of externalization differences is warranted to determine whether cultural factors (e.g., cultural norms related to externalization, acknowledgment of externalization, or stigma), trauma type, or both contribute to the observed pattern.

Validity scale comparisons. Validity scales provide an assessment of response style and therefore cross-cultural examinations of validity scale functioning are essential to the establishment of scale reliability and validity within new populations. The atypical responding (ATR) scale is designed to assess for overreporting of symptomatology and appeared to function comparably among the standardization and immigrant samples. The immigrant sample exhibited ATR elevations when compared with the general standardization sample, but this is not unexpected given that the ATR scale is related to

symptom elevation in general. There were, however, no significant ATR scale differences between the immigrant and clinical (trauma survivor) samples, suggesting that ATR elevations within the immigrant sample were comparable to those found in other trauma survivor groups. In addition, the suggested ATR scale validity cutoff (raw score of 15) invalidated approximately six percent of the immigrant sample, which falls between the percentage invalidated within the TSI-2 combined clinical validity (CCV) sample (~5%) and the percentage invalidated within a PTSD subset of the TSI-2 clinical sample (~11%). Taken together, these results indicate that the ATR likely functions similarly in the immigrant and standardization samples, however specific examination of malingering detection is necessary in order to draw conclusions about the scale's ability to differentiate between genuine and exaggerated (or feigned) symptom reporting in diverse cultural samples.

Importantly, the response level (RL) validity scale (designed to detect symptom underreporting) exhibited significant between sample differences across every sample comparison (i.e., general and trauma-survivor samples). Scores on the RL scale are derived from a tally of the frequency with which "common" symptoms are denied within the TSI-2 (i.e., the number of zero/never responses on RL scale items). Therefore the study sample's elevated RL scores indicate that individuals in the immigrant sample were more likely to deny common symptoms than all samples tested within the TSI-2 standardization process, and may suggest general underreporting or denial of symptoms by individuals within the immigrant sample. However, further examination of these differences is necessary to determine whether symptom underreporting or some other factor (e.g., perhaps the "common" symptoms included on the RL scale are not common

in other cultural groups) is responsible for the RL elevations. Influences related to the forensic context as well as to cultural stigma of mental health symptomatology may also play a role in the observed RL scale elevations. For example, individuals involved in immigration proceedings may believe that appearing "healthy" will help them to stay in the United States, or they may have internalized cultural stigma related to mental illness resulting in difficulty acknowledging the presence of trauma-related symptomatology.,It is important to note that although the immigrant sample exhibited significantly higher RL scores than comparison groups, the elevations did not appear to result in disproportionate profile invalidation given the recommended invalidation cutoff t- score of 75. The general TSI-2 standardization sample yielded an RL invalidation rate of 4.0%, and the immigrant sample yielded a similar RL invalidation rate of 4.3%. Therefore it appears that while RL scores tended to be higher on average within the study sample, they did not result in excessive profile invalidation.

Practice Implications

The results of this study support the utility and appropriateness of the TSI-2 within a culturally diverse sample of immigrants. Cultural/regional group did not significantly impact scores on TSI-2 scales or subscales, and the immigrant sample performed similarly to TSI-2 trauma survivor samples on the majority of indicators. Taken together, these findings suggest that the TSI-2 functions similarly for trauma survivors of various cultural background and that separate norms are likely not required for culturally diverse samples.

Further validation studies will be required to conclusively determine whether the available TSI-2 normative data are appropriate for use with immigrant and non-western

populations; however the study findings suggest that clinicians can be reasonably confident that the results of the TSI-2 can be meaningfully interpreted across cultural bounds. Nevertheless, results of the present study can inform TSI-2 interpretation within culturally diverse samples in several ways.

Factor structure implications. The poor model fit of the four-factor TSI-2 solution within the study sample suggests that clinical interpretation of cross-cultural TSI-2 data should not rely heavily on factor-level results. It is unclear whether factor differentiation is present within diverse cultural samples, and therefore clinicians may prefer to emphasize symptom presentation at the scale and subscale level when discussing TSI-2 data drawn from non-western and immigrant samples.

Response style implications. Further research is required to assess whether the ATR scale provides successful differentiation between genuine and over-reported (or feigned) symptoms in culturally diverse samples, however the results of the current study suggest that ATR scores of trauma-survivors within the immigrant sample did not differ significantly from the ATR scores of trauma survivors within the TSI-2 standardization sample. Although this information is not sufficient to fully assess the function of the ATR scale within the study sample, it does suggest that the ATR scale is unlikely to differentially impact the TSI-2 profile validity of immigrant and non-western individuals.

Consistent comparative elevations on the RL scales may suggest the presence of cross-cultural differences in the tendency to underreport or deny symptoms. Whether this elevation is related to the RL scale in particular (i.e., the symptoms represented on the RL scale are less common in other cultures) or to a general response style tendency, clinicians conducting immigration court assessment may want to pay particular attention

to the possibility of symptom denial, enhance efforts to increase evaluee comfort level, and emphasize the normalization of trauma-related symptom presentation. Although the RL elevations detected in the current study may inform clinical practice, they do not appear to raise concerns about cross-cultural utilization of the TSI-2 as the differences did not result in disproportionate invalidation of TSI-2 profiles.

Limitations and Future Directions

The present study provided a preliminary psychometric examination of the TSI-2 in the context of immigration court evaluations; however several limitations emphasize the importance of continued work in this area. One limitation of the current study was the method of convenience sampling from the available (de-identified) TSI-2 profiles of individuals who have completed immigration-related evaluations. This sampling method was utilized with consideration for population recruitment difficulties; however it limited the study's ability to standardize administration procedures, collect additional data relevant to validity measurement, contact participants for repeated TSI-2 administration, or to emphasize specific cultural groups. As a result, the sample was comprised of individuals from many diverse cultural backgrounds and advanced validity assessment was not feasible. Although the results of the current study did not detect TSI-2 differences among regional groups, the regional groups included in the study represented crude categorizations of many diverse cultural systems. For example, the United Nations list of Latin America and Caribbean countries includes 32 distinct countries and the African regional group would include 54 countries. Clearly, each of these countries is impacted by unique cultural factors and contains diverse racial, ethnic, and tribal groups. Thus, existing cultural differences may not have been detected within the study sample

and future research should focus on more precise cultural definitions (rather than the general regional categorization utilized in this study) to assess for the presence culturally influenced TSI-2 differences more thoroughly.

In addition, the data collection procedure resulted in TSI-2 profiles administered by several different clinicians, which would theoretically suggest the utilization of nested (i.e., immigration cases nested within clinician) analyses. However, the study sample size was not sufficient for cluster analyses, so analyses were not nested. Future research should aim to collect larger samples and utilize nested analyses in order to assess for differences by administering clinician.

Additional research related to the cross-cultural validity and reliability of the TSI-2 is also warranted. Further examination of criterion and predictive validity should be conducted in order to ensure that the scales and subscales are measuring their intended constructs (e.g., correlations with other measures of trauma-related and depressive symptomatology). Test-retest reliability should also be examined.

The results of the present study raised several specific areas of continued study. For example, females within the immigrant sample reported lower levels of externalizing behaviors than their counterparts in the TSI-2 trauma-survivor samples. Because specific trauma history information was not available for every female in the study sample, it was difficult to determine whether cultural or traumatic experience differences (or both) contributed to the observed disparities in externalization. Future research should endeavor to parse out the contributions of both cultural and experiential externalization influences, and to determine whether cultural influences decrease the actual experience of

externalization symptomatology or simply the acknowledgment of externalizing behaviors.

Relatedly, continued exploration of possible culturally influenced under-reporting is necessary to determine whether RL elevations in the current sample are indicative of a general hesitance to report behavioral health symptoms (which may suggest that other TSI-2 scale scores represent underestimates of symptom presentation), whether items that are considered to be common among western populations are less common (and therefore less likely to be endorsed on the RL scale) among other cultural groups, and whether factors such as external motivation and internalized stigma are contributing to RL scale elevations.

The lack of clear factor differentiation within the study sample suggests that future studies should continue to examine factor structure, ideally within a larger sample. Further examination could assist with the identification of the most appropriate cross-cultural factor structure and would continue to inform interpretations of factor-level TSI-2 data.

Despite its limitations, the present study is an important initial examination of the TSI-2's psychometric properties within a diverse sample of immigrants with histories of trauma. As previously noted, the TSI-2 has several characteristics that may make the measure uniquely suited for psychological assessment related to immigration court proceedings including the breadth of assessed symptomatology, the inclusion of validity scales to aid in the assessment of response style (often relevant in the immigration court context), efficiency of administration, and availability of both Spanish and English language forms. There are also several advantages to validating an existing measure

within a new population, rather than developing a population-specific measure. First and foremost, existing measures are readily available for clinical use, and can be utilized immediately once valid use is established. Second, established measures have the benefit of an existing literature base, which can be helpful even if they have not typically been used with the population of interest. Third, validation of existing measures allows clinicians to present results in terms that are likely familiar to the intended audience (in this case, immigration judges and asylum officers), facilitating clear and consistent communication between mental health professionals and legal decision makers. The results of the current study require replication and elaboration by other researchers, but suggest that the TSI-2 can provide meaningful information about a range of symptomatology across cultural bounds, thus further supporting its utility in the context of immigration-related psychological evaluations.

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Vita

Sarah A. Filone, M.A.

EDUCATION

- ***Drexel University; Philadelphia, PA***
  - Ph.D. in Clinical Psychology, Forensic Psychology emphasis
  - M.S. in Clinical Psychology, Forensic Psychology Emphasis
- ***Columbia University; New York, NY (August 2010)***
  - Master of Arts in Applied Clinical Psychology- Personality and Psychopathology
- ***Lafayette College; Easton, PA (May 2008)***
  - Bachelor of Arts in Psychology

GRANTS AND AWARDS

- American Psychology-Law Society (AP-LS) Student Travel Award 2016
- American Psychology-Law Society (AP-LS) Student Travel Award 2015
- The Society for Psychological Study of Social Issues (SPSSI) Student Grant-in-Aid (2013)
- American Psychology-Law Society (AP-LS) Diversity Research Award (2013)

SELECTED PUBLICATIONS AND PRESENTATIONS

Peer Reviewed Journal Articles

- **Filone, S.**, & King, C. (2015). The emerging standard of competence in immigration removal proceedings: A review for forensic mental health professionals. *Psychology, Public Policy, and Law*. *21*(1), 60.
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Presentations

- **Filone, S.,** & DeMatteo, D. (2016, March). *Assessing "Credible Fear": A Psychometric Examination of the Trauma Symptom Inventory-2 in the Context of Immigration Court Evaluations.* Paper presented at the 2016 Annual Conference of the American Psychology-Law Society (AP-LS), Atlanta, Georgia.
- **Filone, S.,** & Eidelson, J. (2015, March). *Role of Forensic Evaluators in Immigration Court Proceedings: Overview and Clinical Considerations.* Paper presented at the 2015 Annual Conference of the American Psychology-Law Society (AP-LS), San Diego, California.
- **Filone, S.,** Arnold, S., & DeMatteo, D. (2015, March). *Testimonial Inconsistencies, Adverse Credibility Determinations, and Asylum Adjudication in the United States.* Paper presented at the 2015 Annual Conference of the American Psychology-Law Society (AP-LS), San Diego, California